

**WHAT IS CLAIMED IS:**

1. A cable winder for retractably extending a cable from a retractable end of said cable, while the other end of the cable remains stationary and curling up inside the cable winder, said winder comprising a front and a back housing, whereby said housing defines a stationary cable buffer compartment, a retractable cable compartment, a lock compartment and a coil-spring compartment, wherein:
  - the stationary cable buffer compartment comprises a stationary cable buffer reel with a reel seat substantially smaller in diameter than said buffer reel and located in the center of said reel for windingly loosening and tightening the stationary end of said cable within the buffer compartment;
  - the retractable cable compartment comprises an upper and a lower spiral track reels with spiral tracks provided thereon, wherein the center of said reels is in rotatable communication with a retractable coil-spring shaft and a predetermined length of the retractable end of said cable being stored in said upper and lower spiral tracks; said cable operatively continues to become the stationary end after passing through a through hole provided on said spiral track reels therein;
  - the lock compartment comprises a ratchet reel lockable by a pawl lock arm and operatively engaged to the retractable coil-spring shaft; and
  - the coil-spring compartment comprises a coil-spring demountably engaged to said retractable shaft attached to the inside of said back housing, whereby a receiving slot is provided on said shaft for torsionally coupled to the spiral track reels and the ratchet reel.

2. The cable winder of claim 1, wherein efficiency of said cable is determined by:

$$\text{Efficiency} = L_1 / (L_1 + L_2 + L_3)$$

where  $L_1$  is the length of the retractable portion of the cable,  $L_2$  is the length of buffer compartment and  $L_3$  is the length of the stationary portion of the cable in said cable winder.

3. The cable winder of claim 1, wherein a cable slit is provided on the upper and lower spiral track reels, said slit extends radially from the outboard edge of said reels to said spiral track.
4. The cable winder of claim 1, wherein said cable is optical fiber cable.
5. The cable winder of claim 2, wherein said cable is optical fiber cable.
6. The cable winder of claim 4, wherein the diameter of said buffer reel and said upper and lower spiral track reels is at least the same or slightly larger than the bending radius of said optical fiber cable.
7. The cable winder of claim 4, wherein the diameter of said buffer reel and said upper and lower spiral track reels is at least 10 mm.